

INTRODUCTION

This manual contains schematic diagrams, component location descriptions and photographs for the cars shown in Table 1 below. The manual consists of six sections: one section for each of the 5 car groups and one section that contains Automatic Climate Control data for all cars.

The first page of each section is an index page. Circuits are listed alphabetically with page numbers for schematics and component location descriptions. Schematic diagrams should be referred to when diagnosing a problem (see Troubleshooting Procedure, page 7). The component location descriptions and photographs are used to locate components on the vehicle.

Automatic Climate Control data, for all cars for which it's applicable, is contained in the last section of the book. Refer to the ACC index on page 301 for the listing of ACC data by car sales designations.

1982 SALES DESIGNATIONS	MODEL
240 D	123.123
300 D (TURBO)....	123.133
300 CD (TURBO)...	123.153
300 TD (TURBO)...	123.193
300 SD (TURBO)...	126.120
380 SL	107.045
380 SEL.....	126.033
380 SEC.....	126.043

TABLE 1

HOW TO USE THIS MANUAL

How to Read Schematic Diagrams

Electrical components which work together are shown together. Schematic drawings are arranged so that current flows from positive at the top of the page, to negative at the bottom. Fuses are shown at the top of the page. All wires, connectors, switches and motors are shown in the flow of current to ground at the bottom of the page. The "hot" labels appearing at the top of fuses or components show the IGNITION SWITCH positions which supply power to that point.

The terminal number "30" appearing on the IGNITION SWITCH and LIGHT SWITCH means that these terminals are always supplied with power. The terminal number "15" on the IGNITION SWITCH means that this terminal is supplied with power only when the IGNITION SWITCH is in the "Run" or "Start" positions.

Component and Wire Representation

All wiring between components is shown exactly as it exists on the vehicle. Wiring inside complicated components has been simplified to aid in understanding their electrical operation. Transistorized components are shown as plain boxes labeled "solid state." Switches and sensors are shown "at rest," as if the IGNITION SWITCH were off. Notes are included which describe how switches and other components work.

Circuits Which Share Power and/or Grounds

Each circuit is shown completely and independently on one schematic diagram. Other circuits which get their power from the same point, or which ground at the same point as the circuit you are looking at, are not shown. However, if other circuits actually share a wire or wires within the schematic diagram, they are partially represented.

Power Distribution and Ground Distribution Diagrams

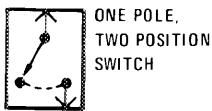
The Power Distribution diagrams show connections from the BATTERY and ALTERNATOR to the fuses, and to the IGNITION SWITCH and LIGHT SWITCH. This will tell you how each circuit gets its power, and what circuits share common fuses. Ground Distribution diagrams show how several circuits are connected to common grounds.

Component Identification

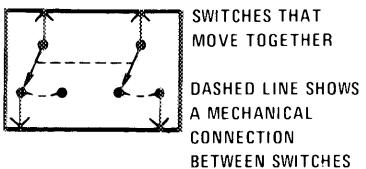
Component names are found underlined next to or above each component. The name is followed, in many cases, by some detail about the component or its operation. Below the component name, in parentheses, you may find a "code" number. This is the factory harness marking number. It is printed on tape wrapped around the branch of the wiring harness which feeds that component.

Some Automatic Climate Control components have a number with an asterisk above the component name. This is the ACC training number for that component.

SYMBOLS

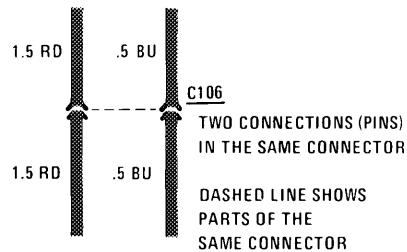
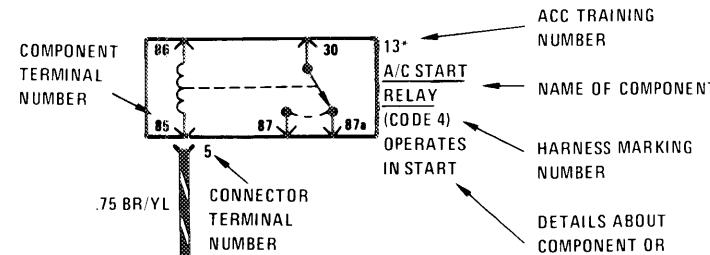


ONE POLE,
TWO POSITION
SWITCH



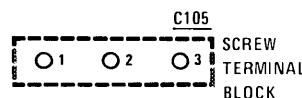
SWITCHES THAT
MOVE TOGETHER

DASHED LINE SHOWS
A MECHANICAL
CONNECTION
BETWEEN SWITCHES



TWO CONNECTIONS (PINS)
IN THE SAME CONNECTOR

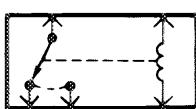
DASHED LINE SHOWS
PARTS OF THE
SAME CONNECTOR



C105
SCREW
TERMINAL
BLOCK

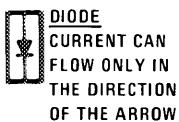


TWO PARTS
OF THE
SAME
COMPONENT

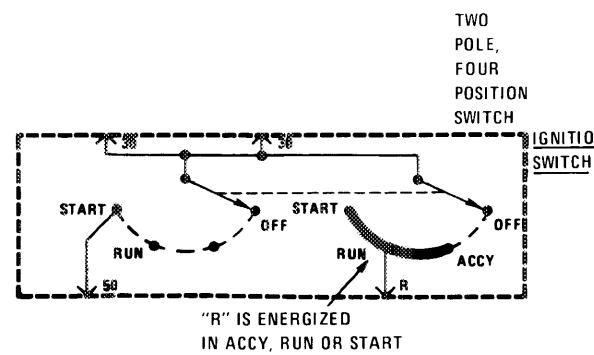


RELAY SHOWN
WITH NO
CURRENT
FLOWING
THROUGH
COIL

WHEN COIL IS
ENERGIZED, SWITCH
IS PULLED CLOSED

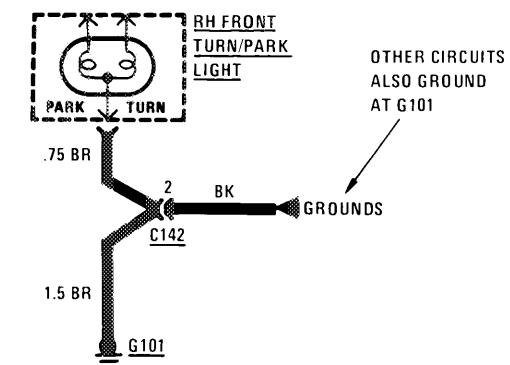


DIODE
CURRENT CAN
FLOW ONLY IN
THE DIRECTION
OF THE ARROW



WIRE COLOR	INSULATION ABBREVIATION
BLACK	BK
BROWN	BR
RED	RD
YELLOW	YL
GREEN	GN
BLUE	BU
VIOLET	VI
GRAY	GY
WHITE	WT
PINK	PK

WIRE SIZE CONVERSION CHART	
METRIC (CROSSECTONAL AREA IN MM ²)	AWG (AMERICAN WIRE GAUGE)
.5	20
.75	18
1	16
1.5	14
2	14
2.5	12
4	10
6	8
8	8
16	4
28	4
25	2
32	2



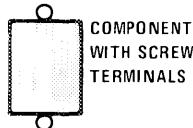
SYMBOLS



ENTIRE
COMPONENT
SHOWN



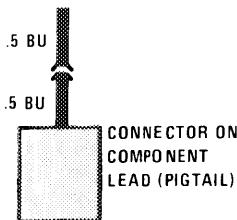
PART OF A
COMPONENT
SHOWN



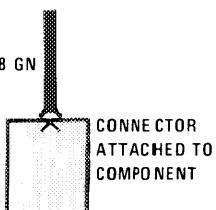
COMPONENT
WITH SCREW
TERMINALS



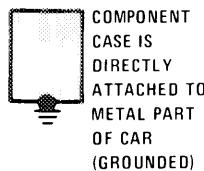
SOLID STATE



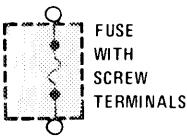
.5 BU
.5 BU
CONNECTOR ON
COMPONENT
LEAD (PIGTAIL)



.8 GN
CONNECTOR
ATTACHED TO
COMPONENT



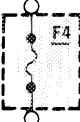
COMPONENT
CASE IS
DIRECTLY
ATTACHED TO
METAL PART
OF CAR
(GROUNDED)



FUSE
WITH
SCREW
TERMINALS

HOT AT ALL TIMES

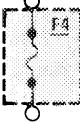
INDICATES THAT FUSE 4
IS ALWAYS SUPPLIED
WITH POWER



F4

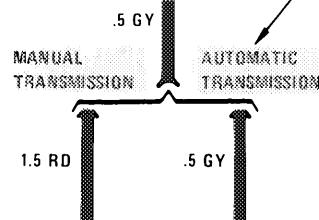
HOT IN RUN OR START

INDICATES THAT FUSE 4
IS SUPPLIED WITH POWER
WITH THE IGNITION
SWITCH IN THE RUN OR
START POSITIONS



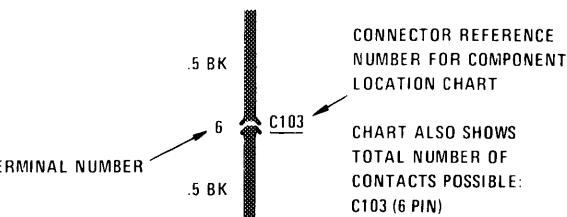
F4

WIRE CHOICES
FOR OPTIONS
ARE SHOWN
AND LABELED

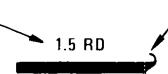


1.5 RD

.5 GY



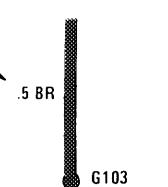
CONNECTOR REFERENCE
NUMBER FOR COMPONENT
LOCATION CHART
CHART ALSO SHOWS
TOTAL NUMBER OF
CONTACTS POSSIBLE:
C103 (6 PIN)



WIRE INSULATION
IS ONE COLOR

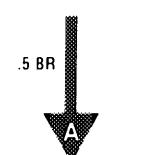


WIRE INSULATION
IS ONE COLOR
WITH ANOTHER
COLOR STRIPE
(RED WITH YELLOW)

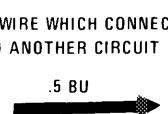


WIRE SIZE IN MM²

WIRE IS ATTACHED TO
METAL PART OF CAR
(GROUNDED)



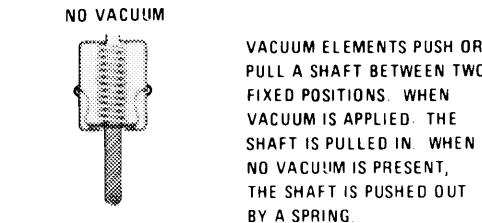
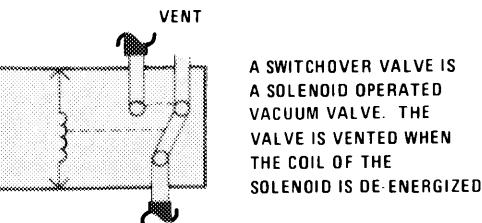
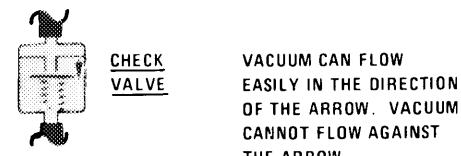
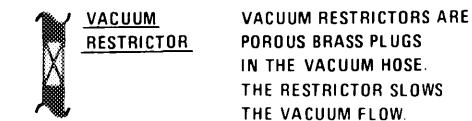
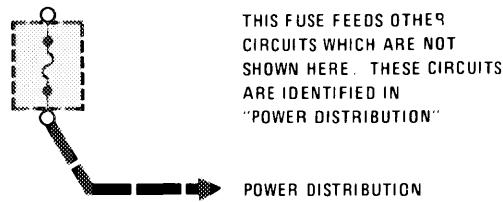
CURRENT PATH
IS CONTINUED
AS LABELED.
THE ARROW SHOWS
DIRECTION OF CURRENT
FLOW AND IS REPEATED
WHERE CURRENT PATH
CONTINUES.



A WIRE WHICH CONNECTS
TO ANOTHER CIRCUIT

.5 BU
LIGHTS: TURN/
HAZARD/STOP

TROUBLESHOOTING



TROUBLESHOOTING PROCEDURE

1. VERIFY THE COMPLAINT

Operate the problem circuit in all modes to check the accuracy of the complaint. This may give a clue as to the extent, nature, and location of the problem.

2. CHECK THE FUSE AND RELATED CIRCUITS

Determine the extent of the problem by operating circuits which share the same fuse. If the other circuits work, the fuse is good. The cause must be within the wiring unique to the problem circuit.

3. REFER TO THE E.T.M. AND ANALYZE THE CIRCUIT

Study the circuit schematic to learn how the circuit should operate. The schematic will tell you:

- Where the circuit receives current
- What circuit protection is involved
- What switches control current flow
- How the loads operate

Understanding the total circuit is necessary if you are to troubleshoot efficiently. Determine possible problem areas and testing locations. The Component Location table tells where components and ground points are located.

4. SYSTEMATICALLY TEST THE CIRCUIT IN ORDER TO ISOLATE THE PROBLEM

As a general guideline:

- If the fault affects a single component of a circuit, start to test at that component.
- If the fault affects a number of components of a circuit, start to test at the point where the circuit gets its power.

5. MAKE THE REPAIR

After you have narrowed the problem down to a specific cause, repair as necessary.

6. VERIFY CIRCUIT OPERATION

First operate the repaired circuit in all modes to be sure you have fixed the entire problem. Next, operate all circuits which share the same fuse. Be sure that this does not cause the problem to reappear.

TESTING TOOLS

A VOLTmeter is used to measure voltage at various points within a circuit. If an analog VOLTMETER is used, it must have a resistance of at least 20,000 ohms per volt in the low range. Any digital VOLTMETER may be used.

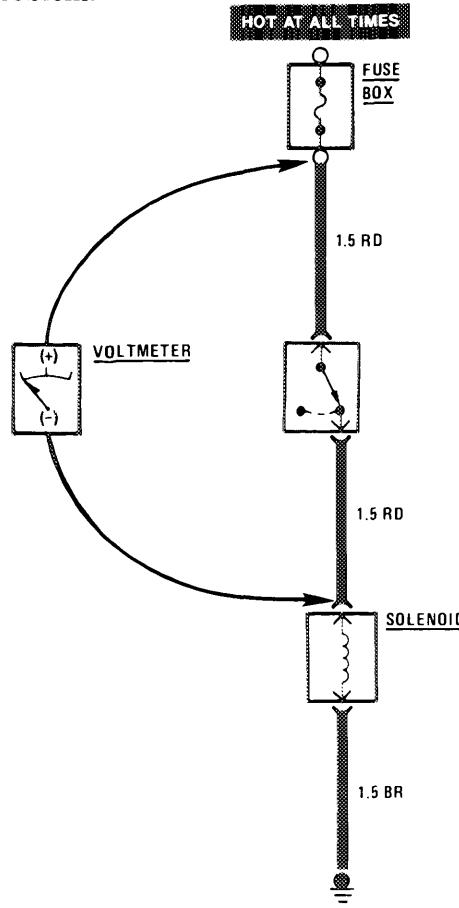
Use of an OHMMETER should be limited to harness wiring, connections and switches. It should not be used on solid state components or relays. An OHMMETER measures a circuit for its resistance to current flow. Since an OHMMETER has an internal battery that provides current to the circuit under test, it is first necessary to disconnect the car battery. This will ensure that there is no voltage already present in the circuit.

An ACC Adaptor Switch is used to test circuits in the new Automatic Climate Control system. To use this tester, first unplug the connector from the ELECTRONIC UNIT FOR TEMPERATURE CONTROL. Then plug this connector to the Adaptor Switch (M-B part no. 126 589 03 21 00). A voltmeter-ohmmeter is then connected to the Adaptor Switch.

TESTS

Voltage Drop Test

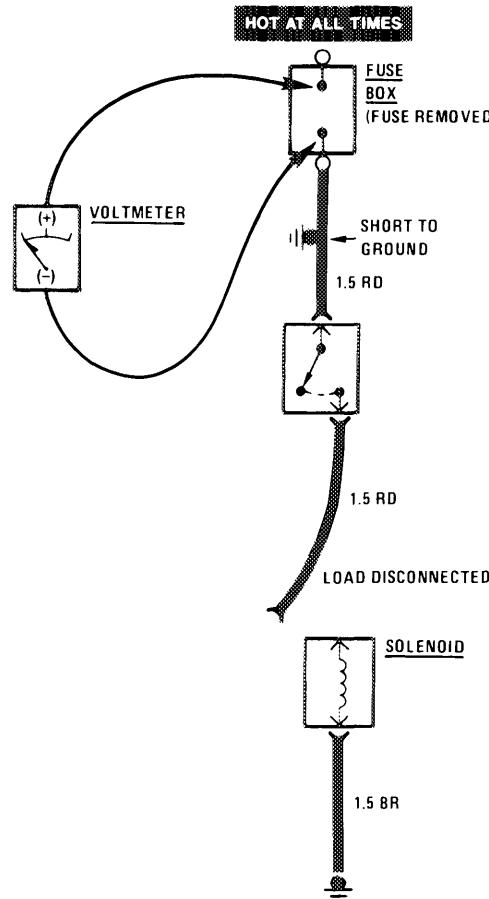
This test checks for voltage being lost along a wire, or through a connection or switch. Connect the positive lead of the VOLTMETER to the end of the wire, or to the side of the connection which is closest to the battery. Connect the negative lead to the other end of the wire, or the other side of the connection. When the circuit is operated, the VOLTMETER will show the difference in voltage between the two points. A difference (or drop) of more than one volt indicates a problem.



Voltage Drop Test

Testing For Short to Ground With a Voltmeter

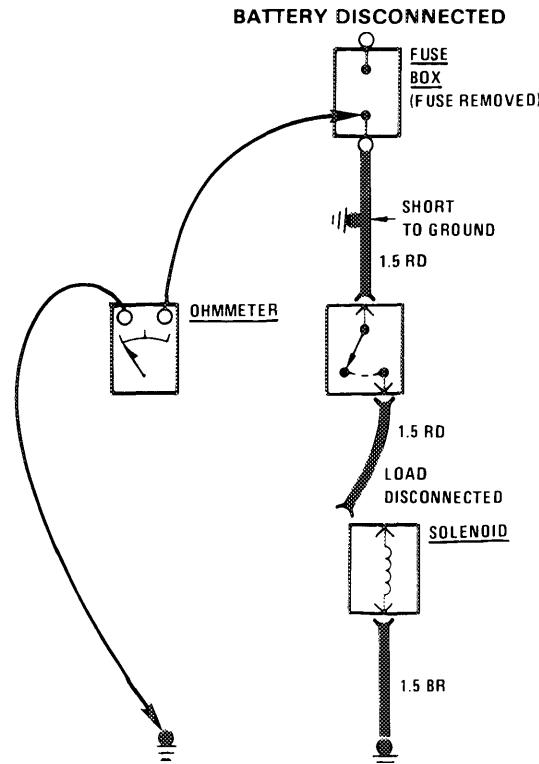
1. Remove the blown fuse and disconnect the load.
2. Connect the VOLTMETER across the fuse terminals.
3. Beginning near the fuse box, move the harness from side to side while watching the VOLTMETER.
4. If the meter registers, there is a short to ground in the wiring.



Testing for Short with Voltmeter

Testing For Short to Ground With an Ohmmeter

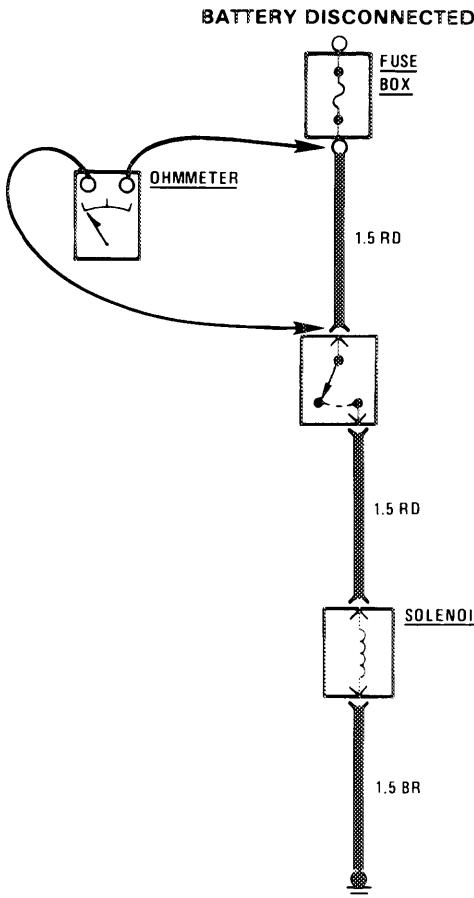
1. Calibrate OHMMETER by adjusting the needle to zero while holding the leads together.
2. Remove the blown fuse and disconnect the battery and load.
3. Connect one lead of the OHMMETER to the fuse terminal on the load side.
4. Connect the other lead to a known good ground.
5. Beginning near the fuse box, move the harness from side to side, while watching the OHMMETER.
6. If there is no short, the meter will show infinitely high resistance. If the meter registers low or no resistance, there is a short to ground in the wiring.



Testing for Short with Ohmmeter

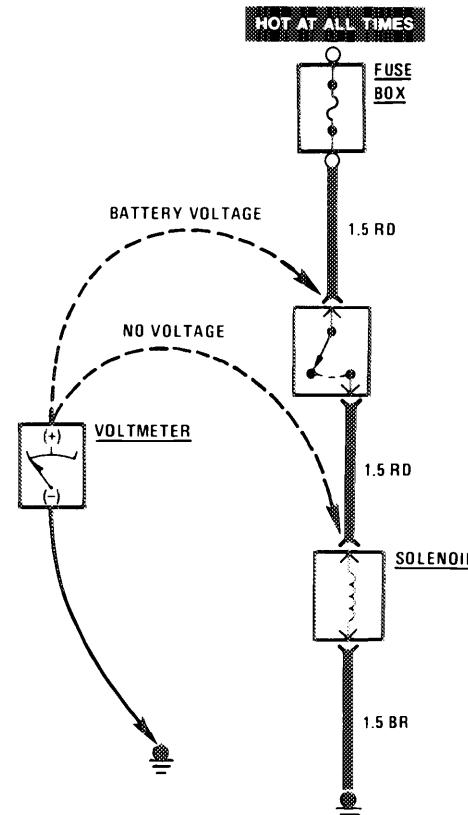
Continuity Test

1. Check OHMMETER by adjusting the needle to zero while holding the leads together.
2. Disconnect the car battery.
3. Connect one lead of the OHMMETER to one end of the part of the circuit you wish to test.
4. Connect the other lead to the other end.
5. If the meter shows low or no resistance, there is continuity.



Voltage Test

1. Connect the negative lead of the VOLTMETER to a known good ground or negative (-) battery terminal.
2. Connect the positive lead of the VOLTMETER to a point (connector or terminal) you wish to test.
3. If the meter registers, there is voltage present. This voltage should be within one volt of measured battery voltage. A loss of more than one volt indicates a problem. A loose connection is a likely cause. Take readings at several points along the circuit to isolate the problem.



Testing Vacuum Components

A VACUUM TESTER is used to apply vacuum to vacuum components. The tester (M-B part no. 589 25 2100) registers in mbar of vacuum. Two Typical applications of this tester are shown below.

PERMISSIBLE LEAKS	
Check Valves	50 mbar in 10 min. at 300 mbar vacuum
Other Vacuum Components	20 mbar/min. at 300 mbar vacuum

